

reference"). Applicant respectfully traverses the Examiner's rejection.

The focus of Applicant's arguments for patentability will be on independent claims 1, 27, and 54, each of which are directed towards different combinations and arrangements of elements to achieve a symmetrical oscillator. By way of illustration, and not limitation, independent claim 1 may be implemented utilizing the circuit configuration illustrated in FIG. 2. Independent claim 27 may be, for example, implemented utilizing the circuit configuration of FIG. 6. Independent claim 54 may be implemented, for example, utilizing the circuit configuration illustrated in FIG. 7.

Although each of independent claims 1, 27, and 54 are directed toward different arrangements and combinations of elements, as clearly illustrated by the exemplary circuit illustrations of FIG. 2, 6, and 7, the Examiner has provided only one basic argument as to why he believes FIGS. 4A, 4B, and 6 of the *Nicholls* reference anticipate the different combinations and arrangements of elements recited in independent claims 1, 27, and 54. As will be demonstrated below, the Examiner's attempt to use this "one size fits all" approach to reject claims 1, 27, and 54 is untenable when it is subject to detailed scrutiny.

As best understood, the Examiner's rejection of independent claims 1, 27, and 54 utilizing the *Nicholls* reference can be summarized as follows:

- i) elements 50 (bipolar NPN transistors) are "first and second active elements," where the bases are "drive terminals" and the collectors and emitters are "gain terminals";
- ii) element 92 (a coaxial resonator) is the claimed "reactive element" having an inherent inductance and is coupled to the "gain terminals";

iii) element 104 (FIG. 6) is an additional inductor coupled to the claimed "reference node";

iv) elements 58 (capacitors) are either or both the claimed "feedback circuits" and the claimed "shunt circuits";

v) the claimed "output signal" is taken at the node(s) labeled  $S_{osc}$ ; and

vi) the claimed "fundamental resonant frequency" is defined by reactive components in the "feedback circuit and shunt capacitor (58)".

As will be demonstrated below, the above assertions by the Examiner simply fail to disclose the specific combinations and arrangements of elements as recited in independent claims 1, 27, and 54 of the instant application.

#### Claim 1

Independent claim 1 requires first and second active components having a drive terminal and first and second gain terminals, where one of the first and second gain terminals of each active component is coupled to a "first reference node." The Examiner alleges that the "additional inductor" 104 shown in FIG. 6 of the Nicholls reference is connected to a "reference point," presumably node 98, and the collectors of transistors 50 are coupled to node 98. It is assumed, for the purposes of argument, that the collectors of transistors 50 of the Nicholls reference are the claimed "one of the gain terminals" and that the emitters must therefore be the claimed "other gain terminals."

Given these assumptions, however, the Examiner's argument that the Nicholls reference anticipates independent claim 1 of the instant application is untenable. First, neither FIG. 6,

iii) element 104 (FIG. 6) is an additional inductor coupled to the claimed "reference node";

iv) elements 58 (capacitors) are either or both the claimed "feedback circuits" and the claimed "shunt circuits";

v) the claimed "output signal" is taken at the node(s) labeled  $S_{osc}$ ; and

vi) the claimed "fundamental resonant frequency" is defined by reactive components in the "feedback circuit and shunt capacitor (58)".

As will be demonstrated below, the above assertions by the Examiner simply fail to disclose the specific combinations and arrangements of elements as recited in independent claims 1, 27, and 54 of the instant application.

#### **Claim 1**

Independent claim 1 requires first and second active components having a drive terminal and first and second gain terminals, where one of the first and second gain terminals of each active component is coupled to a "first reference node." The Examiner alleges that the "additional inductor" 104 shown in FIG. 6 of the *Nicholls* reference is connected to a "reference point," presumably node 98, and the collectors of transistors 50 are coupled to node 98. It is assumed, for the purposes of argument, that the collectors of transistors 50 of the *Nicholls* reference are the claimed "one of the gain terminals" and that the emitters must therefore be the claimed "other gain terminals."

Given these assumptions, however, the Examiner's argument that the *Nicholls* reference anticipates independent claim 1 of the instant application is untenable. First, neither FIG. 6,

nor FIGS. 4A-B of the *Nicholls* reference disclose the claimed "first and second feedback circuits . . . coupled between the other of the first and second gain terminals of the [first and second active components] and a common node." As listed in (iv) above, the Examiner takes the position that the claimed first and second feedback circuits are "by way of shunt elements (58)." Capacitors 58 as illustrated in FIG. 6 (or FIGS. 4A-B for that matter) simply do not meet the language of independent claim 1. Indeed, it is assumed for arguments sake that one end of capacitors 58 are coupled to the respective emitters of transistors 50 by way of resistors 54 and that this would meet the claim requirement that the first and second feedback circuits are coupled to the "other gain terminals of the active components." The other ends of the capacitors 58, however, are not coupled to a "common node" as required by the first and second feedback circuit elements of independent claim 1. Rather, the other ends of the capacitors 58 of the *Nicholls* reference are coupled to the respective bases of the transistors 50, i.e., they are coupled to the drive terminals of the active components, using the claim parlance. Simply put, the respective bases of the transistors 50 of the *Nicholls* reference cannot represent the claimed "common node" inasmuch as the coaxial resonator 92 and the capacitors 64 are coupled between the bases and prevent the formation of "common node" as claimed.

It is noted that the Examiner's contention that "feedback is by way of shunt elements (58)" is somewhat confusing because Applicant is unsure whether the Examiner alleges that the capacitors 58 also, or alternatively, meet the "first and second shunt circuit" limitations of independent claims 27 and 54. If the Examiner contends that capacitors 58 are the claimed "first and second shunt circuits" (claims 27 and 54) but are not the claimed "first and second feedback circuits" (claim 1), then the

Examiner has failed to identify what component or components of FIGS. 4A-B and FIG. 6 constitute the "first and second feedback circuits" of independent claim 1.

As listed in (ii) above, the Examiner contends that element 92 of the *Nicholls* reference is the claimed "reactive element" of independent claim 1 and that it is "coupled to the gain terminals" of the transistors 50. This is incorrect. Element 92 as illustrated in FIGS. 4A-B and FIG. 6 of the *Nicholls* reference is coupled between the bases (i.e., the drive terminals) of the transistors 50, not the collectors or emitters (i.e., the gain terminals) of the transistors 50. If the Examiner contends that the bases of the transistors 50 are the claimed "gain terminals" of the active components (i.e., the transistors 50), then the *Nicholls* reference fails to disclose the claimed "reactive element" as recited in independent claim 1 because that element must be "coupled between the drive terminals of the first and second active components."

For the foregoing reasons, Applicant respectfully submits that the *Nicholls* reference fails to disclose each and every feature of the invention as recited in independent claim 1. Further, claims 2-6, 8, 13, and 15-20 depend from independent claim 1 and contain all of the limitations thereof as well as other limitations that are neither disclosed nor suggested by the prior art of record. Accordingly, Applicant respectfully requests that the Examiner withdraw his § 102(e) rejection of the subject claims as being anticipated by the *Nicholls* reference.

#### **Claim 27**

Independent claim 27 requires "a first reactive element" coupled between the "other" gain terminal of a first active component and the drive terminal of the first active component.

Independent claim 27 also requires "a second reactive element" coupled between the "other" gain terminal of a second active component and the drive terminal of the second active component. By way of example, these limitations may be implemented via the circuit illustrated in FIG. 6 of the instant application. There, the first reactive element may be formed from one or both of inductor 22B and capacitor 56, which are coupled from the collector to the base of transistor 24. Similarly, the second reactive element may be implemented by way of one or both of inductor 22C and capacitor 58, which are coupled between the collector and the base of transistor 26.

As listed in (ii) above, the Examiner contends that the claimed "reactive element" is met by element 92 as illustrated in FIGS. 4A-B and FIG. 6 of the *Nicholls* reference. Element 92, however, does not include "a first reactive element" and a "second reactive element," each of which is coupled between the "other" gain terminal of the respective transistor 50 and the drive terminal thereof. Indeed, element 92 is coupled between the respective drive terminals of the transistors 50. Notably, element 92 is not coupled to either of the gain terminals (i.e., the collector or emitter) of the transistors 50.

Independent claim 27 also requires "a first shunt circuit" and "a second shunt circuit," each having a reactive component coupled between the respective drive terminals of the first and second active components and "a common node." By way of example, capacitors 60, 62 as illustrated in FIG. 6 of the instant application may be used to implement the first and second shunt circuits as claimed in independent claim 27, where respective ends of such capacitors are coupled to a common node 50.

The *Nicholls* reference fails to disclose the above elements of the invention as recited in independent claim 27. As listed

in (iv) above, the Examiner contends that capacitors 58 are the claimed "shunt circuits." This position is untenable. Capacitors 58 are coupled between the respective drive terminals (i.e., the bases) of the transistors 50 and the respective emitters thereof. Capacitors 58 are not coupled to a "common node" as required by independent claim 27.

Independent claim 27 also requires "a feedback circuit coupled between the others of the first and second gain terminals of the first and second active components." By way of example, this element may be implemented via inductor 22A as illustrated in FIG. 6 of the instant application. Indeed, inductor 22A is coupled between the respective collectors of transistors 24 and 26. As best understood, the Examiner contends that capacitors 58 of the *Nicholls* reference provide feedback and, therefore, disclose the features "of the feedback circuit" as recited in independent claim 27 of the instant application (see (iv) above). It is noted, however, that capacitors 58 are not coupled between respective gain terminals of the transistors 50 as required by independent claim 27.

For the foregoing reasons, Applicant submits that the *Nicholls* reference fails to disclose each and every feature of the invention as recited in independent claim 27. Further, claims 30, 31, 34, 43, and 45-48 depend from independent claim 27 and contain all of the limitations thereof as well as other limitations that are neither disclosed nor suggested by the prior art of record. Accordingly, Applicant respectfully requests that the Examiner withdraw his § 102(e) rejection of the subject claims as being anticipated by the *Nicholls* reference.

**Claim 54**

Independent claim 54 recites that "the drive terminal of the first active component" and "the drive terminal of the second active component" are coupled to "a first reference node." By way of example, these limitations may be implemented utilizing the circuit illustrated in FIG. 7 of the instant application. There, the respective drive terminals (e.g., the bases) of the transistors 24, 26 are coupled together at a first reference node 104.

As best understood, the Examiner takes the position that transistors 50 of the *Nicholls* reference show that the respective bases thereof are coupled to "a first reference node" as recited in independent claim 54 of the instant application. This is incorrect. The bases of transistors 50 are not coupled to the same node; rather, they are coupled to separate nodes 52, one such node for each negative resistance cell 90A, 90B.

Independent claim 54 also requires "a reactive element coupled between one of the first and second gain terminals of the first active component and one of the first and second gain terminals of the second active component." By way of example, this limitation may be implemented as illustrated in FIG. 7 of the instant application via inductor 22, which is coupled between the respective collectors of the transistors 24, 26.

As best understood, the Examiner takes the position that element 92 of the *Nicholls* reference meets the "reactive element" limitation of independent claim 54. This is incorrect. Element 92 is not coupled between respective gain terminals of transistors 50. Indeed, element 92 is coupled between respective bases (i.e., drive terminals) of transistors 50.

Independent claim 54 also requires "a first shunt circuit" and "a second shunt circuit," each having a reactive component coupled between respective gain terminals of the active



components and "a common node." By way of example, this may be implemented via capacitors 74, 76 as illustrated in FIG. 7 of the instant application. Indeed, capacitors 74, 76 are coupled between respective emitters of transistors 24, 26 and a common node 50.

As best understood, the Examiner takes the position that capacitors 58 of the *Nicholls* reference meet these limitations of independent claim 54 of the instant application. This is incorrect. Indeed, capacitors 58 are coupled between respective drive terminals of transistors 50 and respective gain terminals thereof. Notably, capacitors 58 are not coupled between respective gain terminals of transistors 50 and "a common node" as required by independent claim 54.

In view of the foregoing, Applicant respectfully submits that the *Nicholls* reference fails to disclose each and every feature of the invention as recited in independent claim 54. Further, claims 57-59, 61, 66, and 68-73 depend from independent claim 54 and contain all of the limitations thereof as well as other limitations that are neither disclosed nor suggested by the prior art of record. Accordingly, Applicant respectfully requests that the Examiner withdraw his § 102(e) rejection of the subject claims as being anticipated by the *Nicholls* reference.

As it is believed that all of the Examiner's rejections have been overcome, Applicant submits that the instant claims are in condition for allowance. Early and favorable action is earnestly solicited. If, however, for any reason the Examiner does not believe that such action can be taken at this time, it is respectfully requested that he telephone Applicant's attorney at (908) 654-5000 in order to overcome any additional objections which he might have.

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If there are any additional charges in connection with this requested amendment, the Examiner is authorized to charge Deposit Account No. 12-1095 therefor.

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Respectfully submitted,

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